

CLAIMS

1. A mounting comprising:
 - a substrate including a first mounting surface and an aperture through the substrate, wherein the first mounting surface includes conductive first traces adjacent to the aperture; and
 - a first package including a base, a body of a hardened encapsulant material over a first side of the base, and a first chip within the body and electrically connected to input/output terminals of the first package,
- 10 wherein the first side of the base is juxtaposed with the mounting surface, the body is within the aperture, and the input/output terminals of the first package each superimpose the first mounting surface and are electrically connected to a respective one of the first traces.
- 15 2. The mounting of claim 1, wherein the base of the first package is a metal leadframe, and a plurality of leads of the leadframe form the input/output terminals of the first package.
3. The mounting of claim 2, wherein the leads are horizontal and include an inner portion within the body and an outer portion outside of the body, and the inner portion of the leads is in a horizontal plane of a first exterior surface of the package.
- 20 4. The mounting of claim 3, wherein the inner lead portion of the leads of the first package includes a means for vertically locking the lead to the body.

5. The mounting of claim 1, wherein the chip is in a flip chip electrical connection with the base.
6. The mounting of claim 1, wherein the package further comprises a second chip within the body and electrically connected to the first chip.
7. The mounting of claim 1, wherein the base of the package comprises an insulative sheet with first circuit patterns on the first side of the insulative sheet, wherein a first end of each first circuit pattern is within the body and electrically connected to the first chip, and a second end of each first circuit pattern is outside of the body, and wherein the second end of the first circuit patterns forms a respective one of the input/output terminals of the package, and said second ends are each juxtaposed with and electrically connected to a respective one of the first traces of the first mounting surface of the substrate.
8. The mounting of claim 1, wherein the first mounting surface includes a plurality of channels adjacent to the aperture, and the input/output terminals of the package are each inserted into a respective one of the channels and are electrically connected therein to one of the first traces.
9. The mounting of claim 1, wherein a second side of the base opposite the first side is flush with the first mounting surface.

10. The mounting of claim 1, further comprising another package stacked on and electrically connected to said first package.

11. The mounting of claim 1, wherein said chip is in a cavity of said body.

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12. The mounting of claim 1, further comprising a plurality of clips on the first mounting surface, with each clip being electrically connected to a respective one of the first traces of the substrate, and the input/output terminals of the package are within one of said clips.

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13. The mounting of claim 1, wherein said substrate includes a second mounting surface opposite the first mounting surface, and said second mounting surface includes conductive second traces adjacent to the aperture; and

15 further comprising another said package juxtaposed with the second mounting surface, wherein at least a portion of the body of the second package is within the aperture, and the input/output terminals of the second package each superimpose the second mounting surface and are electrically connected to a respective one of the second traces.

20 14. A mounting comprising:

a substrate including a first mounting surface and an aperture through the substrate, wherein the first mounting surface includes conductive first traces adjacent to the aperture; and

25 a first leadframe package including a body of a hardened encapsulant material, a chip within said body, and a plurality of horizontal metal leads, wherein each lead

includes an inner portion within said body and an outer portion outside of the body, a first surface of the inner portion of the lead is electrically connected to the chip, and an opposite second surface of the inner portion of the lead is exposed at a horizontal first exterior surface of the body, and

5 wherein the body of the package is within the aperture and the outer portion of each of the leads superimposes the first mounting surface and is electrically connected to a respective one of the first traces.

15. The mounting of claim 14, wherein the first leadframe package further
10 includes a die pad upon which the chip is mounted.

16. The mounting of claim 14, wherein chip is in a flip chip connection with the first surface of the inner portion of the leads.

15 17. The mounting of claim 14, wherein the first leadframe package includes a second chip stacked with the first chip.

18. The mounting of claim 14, wherein the body includes a cavity within which said first chip is located.

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19. The mounting of claim 14, wherein the first mounting surface includes a plurality of channels adjacent to the aperture, and the outer lead portion of each of the leads is in a respective one of the channels and is electrically connected therein to one of the first traces.

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20. The mounting of claim 14, wherein the first exterior surface of the body is flush with the first mounting surface.

21. The mounting of claim 14, further comprising another package stacked on 5 and electrically connected to said first leadframe package.

22. The mounting of claim 14, further comprising an electronic device mounted on the first package and electrically connected to the leads of the first leadframe package.

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23. The mounting of claim 14, further comprising a plurality of clips on the first mounting surface, with each clip being electrically connected to a respective one of the first traces of the substrate, and the outer lead portion of each of the leads is in one of said clips.

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24. The mounting of claim 14, wherein said substrate includes a second mounting surface opposite the first mounting surface, said second mounting surface including conductive second traces adjacent to the aperture; and

20 further comprising a second said leadframe package juxtaposed with the second mounting surface, wherein at least a portion of the body of the second leadframe package is within the aperture, and the outer portion of each of the leads of the second leadframe package superimpose the second mounting surface and are electrically connected to a respective one of the second traces.

25. A mounting comprising:

a substrate including a first mounting surface and an aperture through the substrate, wherein the first mounting surface includes conductive first traces adjacent to the aperture; and

a package including an insulative sheet having a first surface, a body of a hardened encapsulant material over said chip and a central portion only of the first surface of the sheet, a plurality of conductive first circuit patterns on the first surface of the sheet, said first circuit patterns each having a first end within the body and a second end outside of the body, and a chip within the body and electrically connected to the first end of the first circuit patterns,

wherein the body is within the aperture, the first surface of the sheet superimposes the mounting surface and the aperture, and the second end of each first circuit pattern superimposes and is electrically connected to a respective one of the first traces.

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26. The mounting of claim 25, wherein the insulative sheet includes a second surface opposite the first surface, said second surface including input/output terminals electrically connected through the sheet to the first circuit patterns.

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27. A method of making a mounting, the method comprising:

providing a first leadframe package including a body of a hardened encapsulant material, a chip within said body, and a plurality of horizontal metal leads, wherein each said lead includes an inner portion within said body and an outer portion outside of the body, and the inner portion of the leads includes a first surface electrically connected to

the chip and an opposite second surface exposed in a plane of a horizontal first exterior surface of the body;

providing a substrate having a first mounting surface and an aperture through the substrate, wherein the first mounting surface includes first traces adjacent to the aperture;

5 placing the first leadframe package on the substrate so that the body is within the aperture, and the outer portion of each of the leads superimposes a respective one of the first traces of the first mounting surface; and

electrically connecting the outer portion of each of the leads to a respective one of the first traces.

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28. The method of claim 27, further comprising mounting a second package on the first exterior surface of the body of the first leadframe package; and

electrically connecting the second package to the leads of the first leadframe package.

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29. The method of claim 27, wherein the first mounting surface includes a plurality of channels; and

further comprising inserting the outer portion of each of the leads in a respective one of the channels and thereby electrically connecting the outer portion of the leads to 20 the respective traces.

30. The method of claim 27, wherein the first mounting surface includes a plurality of clips; and

 further comprising inserting the outer portion of each of the leads into a respective one of the clips, thereby electrically connecting the lead to the respective first trace.